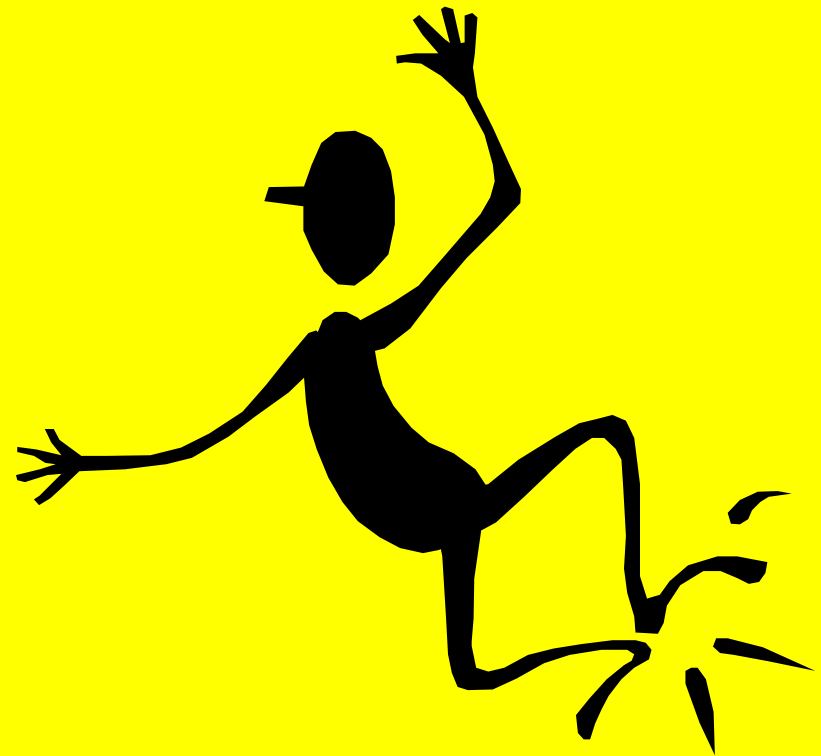


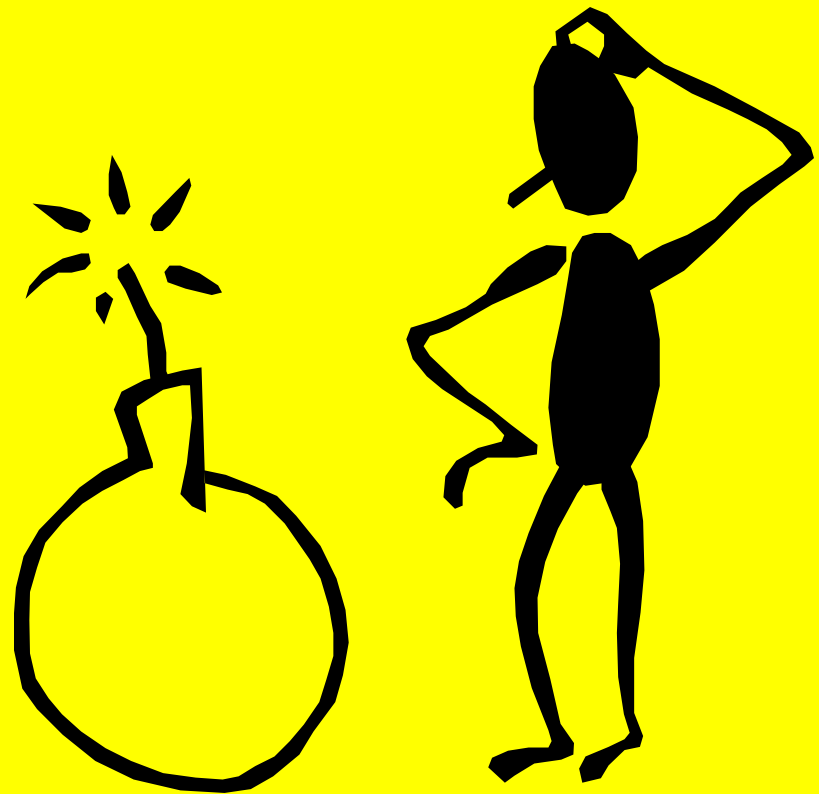
# BENEFIT-COST ANALYSIS

✈ Brought to YOU  
by.....*Warren Ferrell,*  
*Barbara Johnson, &*  
*Larry Barry*



# BENEFIT-COST ANALYSIS

- Why or Why Not?
- What?
- How?
- For Whom?
- Where to?



# Benefit-Cost Analysis

## Why?



- Public Law 103-272 (July 5, 1994)
  - ✈ Section 47115(d) specifies that in selecting projects for discretionary grants to preserve and enhance capacity, the Secretary shall consider:
    - The effect on system capacity
    - project benefit and cost
    - financial commitment from the sponsor

# Benefit-Cost Analysis

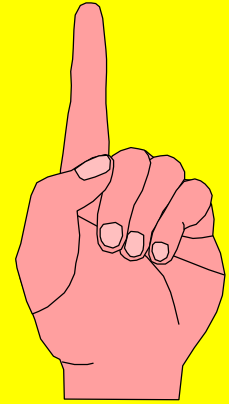
## Why?

- Policy regarding Revision of Selection Criteria for Discretionary AIP 10-31-94
  - ✈️ BCA required for those projects which:
    - Preserve or Enhance Capacity
    - Request 10 million + over projects life
    - Future Refinements Discussed:
      - Adjusting the threshold
      - Sliding the threshold based on Project Type, Airport Size
      - Expanding the application beyond Capacity projects



# Benefit-Cost Analysis

## Why?



- June 24, 1997 Policy regarding BCA for Capacity Projects requiring Discretionary
  - BCA Threshold lowered to \$5 million
  - Suggests BCA early to consider alternatives
  - Suggests timing for conducting BCA
  - BCA preparation costs are reimbursable
  - Introduces HOW-TO Guidance

# Benefit-Cost Analysis

## Why?

- It makes you think about “plausible” alternatives
- It might change the scope of the project
- It validates the need for the project
- It provides a defensible position for an investment decision
- It provides support for rejecting an alternative or the project



# Benefit-Cost Analysis

## Why Not?

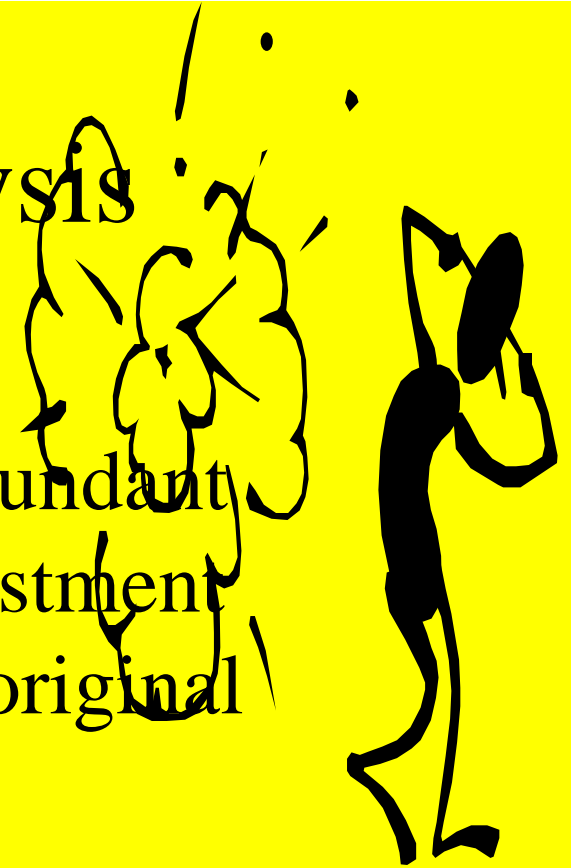


- It is not easily understood
  - would it achieve its objective to “facilitate the production of consistent, thorough, and comparable analysis”?
- It is too broad in scope
  - should it apply to every discretionary project over \$5 million which preserves or enhances capacity? Do we all define preserving capacity the same?

# Benefit-Cost Analysis

## Why Not?

- The BCA Analysis becomes redundant when applied to an original investment decision and then a rehab of an original investment
- The BCA offers no system comparative analysis
  - ✈ It is primarily used for go/no-go project decisions





# Benefit-Cost Analysis

## What?

- A comparison of benefit and cost for a wide range of alternatives to solve a common problem
- Quantitative and qualitative aspects
- Financial analysis is not a BCA!



# Benefit-Cost Analysis

## What?

- Typical Benefits Include:
  - Reduced Delay
  - More Efficient Aircraft
  - Safer and More Secure Air Travel
  - Reduced Environmental Impacts
- Typical Costs Include:
  - Planning, Construction, Operation, Maintenance



# Benefit-Cost Analysis How-To

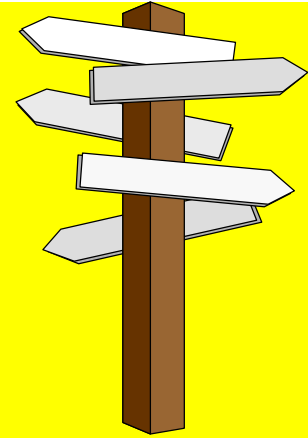
- June 2 1997 Draft FAA Airport Benefit-Cost Analysis Guidance

✈️ Read it and Weep!

✈️ Note: Guidance states “it is impossible to define a mechanistic blueprint for BCA that would cover all possible situations.”



# Benefit-Cost How-To



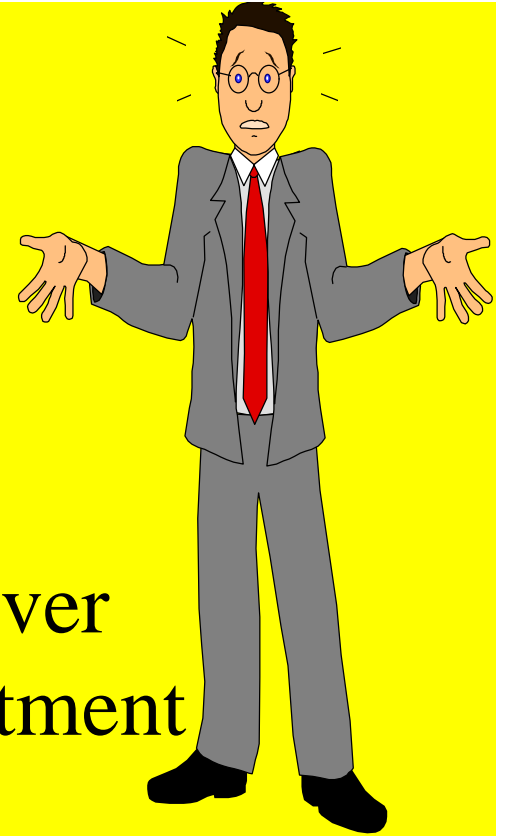
- A BCA Analysis consists of the following:
  - Define Project Objectives
  - Specify Assumptions about Future Conditions
  - Identify Base Case (No Investment Scenario)
  - Identify & Screen all Alternatives
  - Determine Appropriate Evaluation Period
  - Establish Reasonable Effort Level for Analysis

# Benefit-Cost How-To



- BCA Steps continued:
  - Identify, quantify, evaluate Benefits & Costs of Alternatives relative to the Base Case
  - Measure Impact of Alternatives on Airport Use
  - Compare Benefits-Costs of Alternatives
  - Perform Sensitivity Analysis
  - Make a Recommendation for Best Action

# Benefit-Cost How-To



- Selection of Evaluation Period
- Definition: The number of years over which the benefit costs of an investment should be considered
  - Requirement Life: Period where  $\text{benefits} > \text{costs}$
  - Physical Life: Period which Asset will last
  - Economic Life: Period which the Asset will meet the requirements for which it was acquired in a cost effective manner

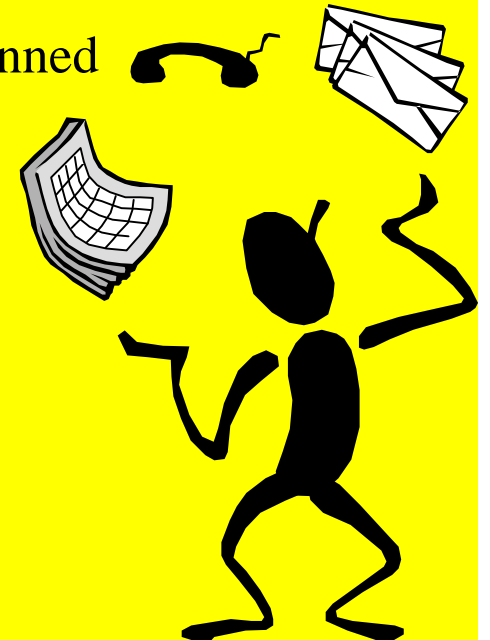
# Benefit-Cost How-To

- THE ASSUMPTIONS

- ✈ WILL BE SCRUTINIZED

- Check your TAF

- Are adjustments needed for changes in local conditions?
- Make sure basic activity does not reflect planned improvements
- Test the sensitivity of the Peak Forecasts
- Monitor Actual Activity to test Forecasts
- Evaluate constraints
- Adjust Assumptions as Needed



# Benefit-Cost How-To

- Alternatives

- ✈ Include as a minimum:

- Investment on and off the Airport
    - Rehab, replace, enhance existing facilities
    - Demand Management
    - Redistribution of Responsibility

- ✈ Full Range

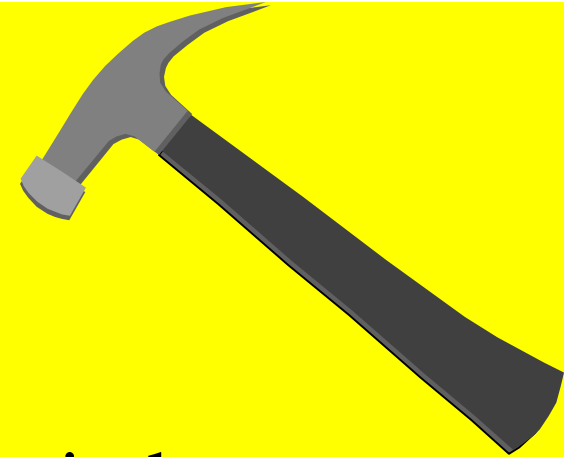
- ✈ Self Contained

- Defined so that incremental benefits/costs are unambiguously and solely attributed to it





# Benefit Cost How-To



- Selection of Appropriate Time Period:
  - Economic Life
  - Use the same time period for all Alternatives
    - If this can't be done then set the BCA time-period to the useful life of the most durable alternative.
  - Typically is 20 years +5

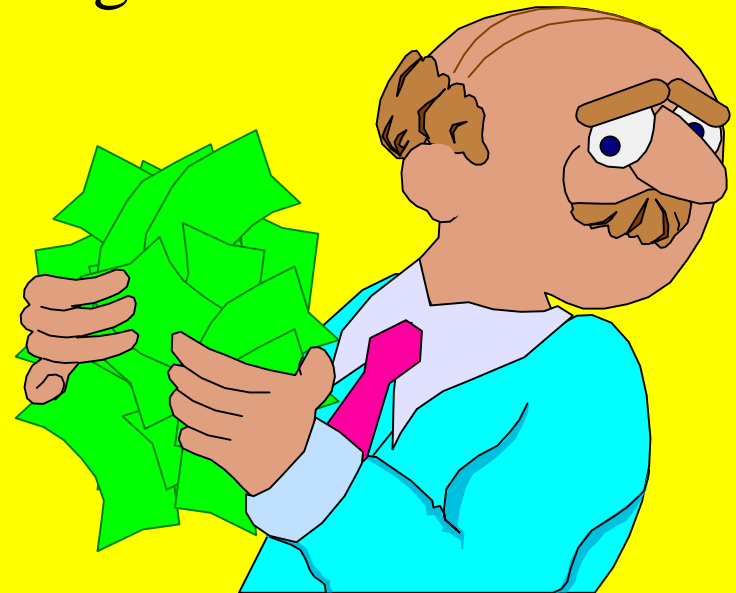
# Benefit-Cost How-To



- Level of Effort
  - ✈ No prescribed formula, so,
    - Consider the magnitude & complexity of the Project
    - Consider the # of Practical Alternatives
    - Consider if there is ONE Dominant Alternative
    - Consider the Availability of the Data and the Controversy of the Project
  - ✈ Justify the Level of Effort Chosen

# Benefit-Cost How-To

- Level of Effort continued:
  - ✈ Figure at least 4 to 6 months
  - ✈ Figure about \$100,000 for large HUB



# Benefit-Cost Analysis

## How-To

- Measurement of Benefits
  - Identify effect and to whom
  - Measure the effects in physical or time-based units
  - Put a dollar value on the physical or time-based units



# Benefit-Cost Analysis

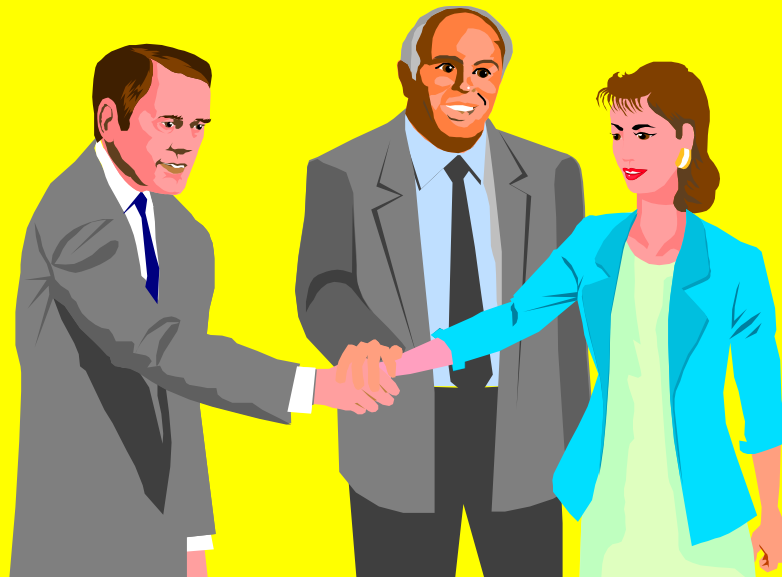
## How-To



- Measurement of Cost: The Resources Consumed
  - Opportunity Costs
  - Incremental Costs (cost differences of options)
    - Cost elements common to all options should be netted out
  - Sunken Costs (Resources already consumed) - Don't use it & Depreciation- Don't use it
  - Principle and Interest Expenses - Don't use it
  - Inflation

# Benefit-Cost Analysis For Whom?

- Have any of the BC Analysis completed this past year shed new light on our investment decisions?
  - ✈ Have they influenced the FAA or Sponsor?



# Benefit-Cost Analysis

## Where To?

- Closely Monitor the Level of Screening Needed
  - ✈ Common Sense Vs In Depth BCA
  - ✈ Factors to Consider
    - Type of Project
    - Amount of Funding
    - Sponsor Commitment



# Benefit-Cost Analysis

## Where To?

- BCA Review
  - HQ Vs Field Review
  - TAF - How does it Fit?
  - Coordination
- Topic Education
  - How can the BCA influence my decision if it is written in Greek?



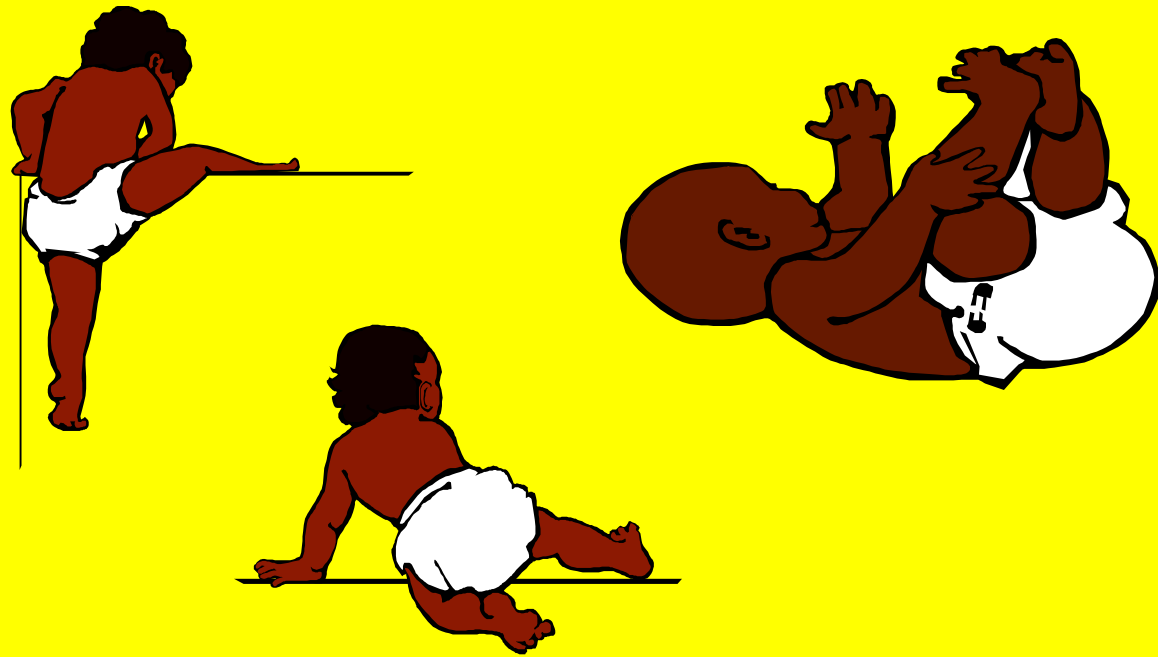


# Benefit-Cost Analysis

## Where To?

- Application of the Studies
  - System Application Vs Single Project
- Consider Updating the Policy and the Guidance





Congratulations Warren! Baby Joshua makes three!!!